

What Is Claimed Is:

1. A piezoelectric ink jet printer head formed by laminating a plurality of plates, the piezoelectric ink jet
5 printer head including:

a) an actuator portion being composed of upper and lower electrodes, a piezoelectric plate inserted between the upper and lower electrodes, a protection layer placed on the upper electrode, and a resilient plate disposed beneath the lower
10 electrode;

b) an ink passage portion composed of a spacer disposed beneath the resilient plate and forming a side portion of a chamber, a channel plate disposed beneath the spacer, the channel plate forming an ink passage in one side of the chamber
15 and simultaneously extending the chamber, and a nozzle plate disposed beneath the channel plate, the nozzle plate forming the lower side of the chamber and having a nozzle communicating with the chamber; and

c) an ink-supplying portion formed by a through-hole
20 reaching the ink passage of the channel plate through the actuator portion and the spacer.

2. A piezoelectric ink jet printer head according to claim 1, wherein a tapered portion is formed at the upper part the
25 nozzle such that the cross section of the chamber varies from the chamber to the starting point of the nozzle gradually.

3. A piezoelectric ink jet printer head according to claim 1 or 2, wherein the ink jet printer head is provided with an ink
30 container above the protection layer, wherein a plurality of elementary ink jet head modules are arrayed on a same plane in a matrix fashion, each module being composed of the actuator

portion, the ink passage portion and the ink-supplying portion, and wherein ink is supplied to the chamber of each elementary ink jet head module from the ink container through each through-hole and ink passage.

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4. A piezoelectric ink jet printer head according to claim 1 or 2, wherein the resilient plate is formed of ZrO_2 .

10 5. A piezoelectric ink jet printer head according to claim 1 or 2, wherein the resilient plate is formed of BaTiO_3 .

6. A piezoelectric ink jet printer head according to claim 1 or 2, wherein the resilient plate is formed of Al_2O_3 .

15 7. A process for manufacturing a piezoelectric ink jet printer head, which is formed by laminating a plurality of plates including a resilient plate having elasticity and a nozzle plate having a nozzle, the process including the steps of:

- 20 a) disposing a resilient plate;
b) printing a lower electrode on the resilient plate;
c) printing a spacer beneath the resilient plate;
d) printing a channel plate beneath the spacer;
e) sintering the assembly of the resilient plate, the lower
25 electrode, the spacer and the channel plate;
f) forming a piezoelectric plate on the lower electrode;
g) forming an upper electrode on the piezoelectric plate;
h) forming a protection layer on the upper electrode;
i) forming a through-hole leading to the spacer from the
30 protection layer;
j) forming a tapered portion in the nozzle plate;
k) forming a micro-spray hole at the apex of the tapered

portion in the nozzle plate; and

1) bonding the nozzle plate and the channel plate to each other.